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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
RYMAN, DANIEL J	

ART UNIT	PAPER NUMBER
2665	

DATE MAILED: 08/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/943,872	JACOBSEN, ERIC A.	
	Examiner	Art Unit	
	Daniel J. Ryman	2665	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 July 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 July 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4/9/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 7/5/2005 have been fully considered but they are not persuasive. Applicant asserts, with respect to all claims, that Smart does not teach or even suggest "selecting one of the time intervals that corresponds to the frequency transformations and using the associated frequency transformation to obtain an indication of the demodulated symbol." Examiner, respectfully, disagrees.

2. Smart teaches that the sliding window transform operates continuously (¶¶ 31-33). Thus, the sliding window transform operates even when it is not correctly detecting a received symbol. Nonetheless, Smart's receiver correctly detects a received symbol based on an initial preamble sequence (¶¶ 137 and 161). Thus, Smart discloses performing sliding window frequency transformations of the signal, each sliding window transformation being associated with a different time interval of the signal (¶¶ 31-33) where the continuous nature of the sliding window transform requires the sliding window transform to perform sliding window transforms on different time intervals of the signal. Smart also discloses selecting, based on the window frequency transformations, one of the time intervals to correspond to said time slice (¶¶ 137 and 161) where the time period in which the correct symbol is received is detected.

3. Given the above arguments, Examiner maintains that the claims are obvious in view of the cited prior art.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 5-9, 17, and 21-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Smart et al. (PG Pub 2002/0041637).

6. Regarding claims 1 and 17, Smart discloses a method comprising the steps of and a receiver comprising means for: receiving a signal indicating a modulated symbol during a given time slice of the signal (¶¶ 109, 112, 120); performing sliding window frequency transformations of the signal, each sliding window transformation being associated with a different time interval of the signal (¶¶ 30-31, 38-39, 109-110, 112, 120, and 137); based on the window frequency transformations, selecting one of the time intervals to correspond to said time slice (¶¶ 30-31, 38-39, 109-110, 112, 120, and 137) where the receiver continuously processes the received signal using the sliding window and where the header detector (ref. 1202) selects one of the time slices in which the signal is properly received; and using the result of the frequency transformation associated with the selected time interval to obtain an indication of the demodulated symbol (¶¶ 109, 112, 120).

7. Regarding claims 5 and 21, Smart discloses that the performing the sliding window transformations comprises: for each transformation, adding at least one additional sample of the signal to the transformation as compared to a previous transformation and removing at least one sample used in the previous transformation (¶¶ 30-31, 38-39, 109-110, 112, 120).

8. Regarding claims 6 and 22, Smart discloses that performing the sliding window frequency transformations comprises: sampling the signal to produce samples at different points

in time; creating a window to select a predetermined number of the samples within the time interval associated with the sliding window transformation; and performing one of the sliding window transformations for each window (¶¶ 30-31, 38-39, 109-110, 112, 120).

9. Regarding claims 7 and 23, Smart discloses that performing each sliding window transformation comprises: advancing the window in time before performing the next sliding window transformation (¶¶ 30-31, 38-39, 109-110, 112, 120).

10. Regarding claims 8 and 24, Smart discloses that the advancing comprises: advancing the window in time by a predetermined number of sampling periods (¶¶ 30-31, 38-39, 109-110, 112, 120).

11. Regarding claims 9 and 25, Smart discloses that the signal comprises an Orthogonal Frequency Division Multiplexing signal (¶ 28).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 2-4, 10-16, 18-20, and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Smart et al. (PG Pub 2002/0041637) in further view of Marchok et al. (USPN 6,122,246).

14. Regarding claims 2 and 18, Smart does not expressly disclose that the selecting comprises: correlating the sliding window transformations with a first pilot code; correlating the sliding window transformations with a second pilot code; and comparing the results of the

correlations with the first and second pilot codes to select said one of the time intervals. However, Smart does disclose using sliding window transformations (¶¶ 30-31, 38-39, 109-110, 112, 120). Marchok teaches, in an OFDM system, correlating a transformation with a pilot code (col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19) in order to determine the pilot code's position and then tracking the location of the pilot codes in order to maintain synchronization (col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19) where the synchronization governs the timing for symbol recovery (col. 5, lines 21-24). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to correlate the sliding window transformations with a first pilot code; to correlate the sliding window transformations with a second pilot code; and to compare the results of the correlations with the first and second pilot codes to select said one of the time intervals since correlating pilot codes is a method for synchronization where the recovered timing signal is used for symbol recovery.

15. Regarding claims 3 and 19, Smart in view of Marchok discloses that the first pilot code is associated with the symbol, and the second pilot code is associated with another symbol adjacent to the first symbol in time (Marchok: col. 3, line 44-col. 4, line 9 and col. 7, lines 59-62).

16. Regarding claims 4 and 20, Smart in view of Marchok discloses that each pilot code is associated with a particular symbol (Marchok: col. 3, line 44-col. 4, line 9 and col. 7, lines 59-62). Smart in view of Marchok also discloses correlating the pilot codes in order to determine a symbol timing (Marchok: col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19). Thus, Smart in view of Marchok suggests that the comparing the results of the correlations comprises: finding a time interval between where the correlations peak (Marchok: col. 5, line 51-col. 6, line 5 and col. 7,

lines 4-19) where the correlation peak will occur in the symbol window (Marchok: col. 7, lines 59-62).

17. Regarding claim 10, Smart discloses generating a modulated signal, the signal comprising a first modulated symbol and a second modulated symbol adjacent to the first modulated symbol in time (¶¶ 82, 84, 85, 109, 111); including a known bit pattern in a preamble sequence associated with a first packet (¶ 137); and including a known bit pattern in a preamble sequence associated with a second packet to indicate a time interval in which to demodulate the first modulated symbol from the signal (¶¶ 137, 161).

18. Smart does not expressly disclose scrambling first pilot tones associated with the first modulated symbol with a first pilot code; and scrambling second pilot tones associated with the second modulated symbol with a second pilot code to indicate a time interval in which to demodulate the first modulated symbol from the signal. Marchok teaches, in an OFDM system, scrambling first pilot tones associated with the first modulated symbol with a first pilot code; and scrambling second pilot tones associated with the second modulated symbol with a second pilot code (col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19) in order to allow the receiver to determine the pilot code's position and then track the location of the pilot codes in order to maintain synchronization (col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19) where the synchronization governs the timing for symbol recovery (col. 5, lines 21-24). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to scramble first pilot tones associated with the first modulated symbol with a first pilot code; and scramble second pilot tones associated with the second modulated symbol with a second pilot code to indicate a time interval in which to demodulate the first modulated symbol from the signal.

19. Regarding claim 11, Smart in view of Marchok discloses that the modulated signal comprises an OFDM signal (Smart: ¶¶ 82, 84, 85, 109, 111).

20. Regarding claim 12, Smart in view of Marchok discloses transmitting the modulated signal (Smart: ¶¶ 82, 84, 85, 109, 111).

21. Regarding claims 13 and 26, Smart discloses a method comprising the steps of and an apparatus comprising means for: receiving a signal containing a modulated symbol (¶¶ 109, 112, 120); performing frequency transformations of the signal (¶¶ 30-31, 38-39, 109-110, 112, 120).

Smart does not expressly disclose correlating the frequency transformations with a first pilot code; correlating the frequency transformations with a second pilot code; and comparing the results of the correlations with the first and second pilot codes to select one of the frequency transformations to obtain an indication of the demodulated symbol. However, Smart does disclose using sliding window transformations and correlating the transformation with a known bit pattern in the packet's preamble (¶¶ 30-31, 38-39, 109-110, 112, 120, and 137). Marchok teaches, in an OFDM system, correlating a transformation with a pilot code (col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19) in order to determine the pilot code's position and then tracking the location of the pilot codes in order to maintain synchronization (col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19) where the synchronization governs the timing for symbol recovery (col. 5, lines 21-24). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to correlate the frequency transformations with a first pilot code; to correlate the frequency transformations with a second pilot code; and to compare the results of the correlations with the first and second pilot codes to select one of the frequency transformations

to obtain an indication of the demodulated symbol since correlating pilot codes is a method for synchronization where the recovered timing signal is used for symbol recovery.

22. Regarding claims 14 and 27, Smart in view of Marchok discloses that the first pilot code is associated with the symbol, and the second pilot code is associated with another symbol adjacent to the first symbol in time (Marchok: col. 3, line 44-col. 4, line 9 and col. 7, lines 59-62).

23. Regarding claims 15 and 28, Smart in view of Marchok discloses that each pilot code is associated with a particular symbol (Marchok: col. 3, line 44-col. 4, line 9 and col. 7, lines 59-62). Smart in view of Marchok also discloses correlating the pilot codes in order to determine a symbol timing (Marchok: col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19). Thus, Smart in view of Marchok suggests that the comparing the results of the correlations comprises: finding a time interval between where the correlations peak (Marchok: col. 5, line 51-col. 6, line 5 and col. 7, lines 4-19) where the correlation peak will occur in the symbol window (Marchok: col. 7, lines 59-62).

24. Regarding claims 16 and 29, Smart in view of Marchok discloses that the signal comprises an Orthogonal Frequency Division Multiplexing signal (Smart: ¶ 28 and Marchok: col. 2, lines 22-53).

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sato et al. (USPN 5,596,582) see entire document which pertains to selecting two successive maxima of the cross-correlation values at a time interval substantially equal to a frame period. Leland (USPN 4,384,362) see col. 3, lines 47-55 which pertains to claim 10.

Guemas (USPN 6,314,113) see entire document which pertains to synchronizing FFT windows in an OFDM system.

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (571)272-3152. The examiner can normally be reached on Mon.-Fri. 7:00-4:30 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel J. Ryman
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